

CLAIMS

1. A laser arrangement, comprising
a resonant cavity that is resonant to one or more
5 fundamental frequencies;
a solid state laser material provided in the
resonant cavity for emitting at least one of said one or
more fundamental frequencies when being irradiated by
pump light;
10 pumping means for providing pump light to said laser
material;
a non-linear optical element provided in the
resonant cavity, said non-linear optical element being
adapted to convert one or more of said fundamental
15 frequencies into a frequency converted beam;
wherein at least one cavity mirror defining the
resonant cavity is highly transmitting for said frequency
converted beam;
characterized in that
20 a quarter wave-plate and a retro-reflector for the
frequency converted beam are arranged in series in the
beam path outside the cavity adjacent to said cavity
mirror, such that the frequency converted beam leaving
the cavity through said mirror undergoes a polarization
25 rotation and re-enters the cavity in a polarization state
orthogonal to its original polarization state.
2. A laser arrangement as claimed in claim 1, wherein
the cavity is defined by a first cavity mirror, a second
30 cavity mirror and a folding mirror, said folding mirror
defining a first cavity branch between said folding
mirror and the first cavity mirror and defining a second
cavity branch between said folding mirror and the second
cavity mirror, the non-linear element being provided in
35 the second branch, and wherein the second mirror and the
folding mirror are both highly transmitting for the
frequency converted beam.

3. A laser arrangement as claimed in claim 1 or 2,
wherein the retro-reflector (M4) has a radius of
curvature and a position with respect to the resonant
cavity in order for two cross-polarized output beams to
5 overlap spatially and exit said cavity as a single beam.

4. A laser arrangement according to any one of the
preceding claims, wherein the non-linear element
comprises a quasi phase-matching grating.
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5. A laser arrangement according to claim 4, wherein
the non-linear element comprises a periodically poled
potassium-titanyl-phosphate (PP-KTP) crystal.

15 6. A laser arrangement according to any one of the
preceding claims, wherein the laser material comprises a
neodymium-doped crystal selected from YAG, YVO₄ and GdVO₄.